

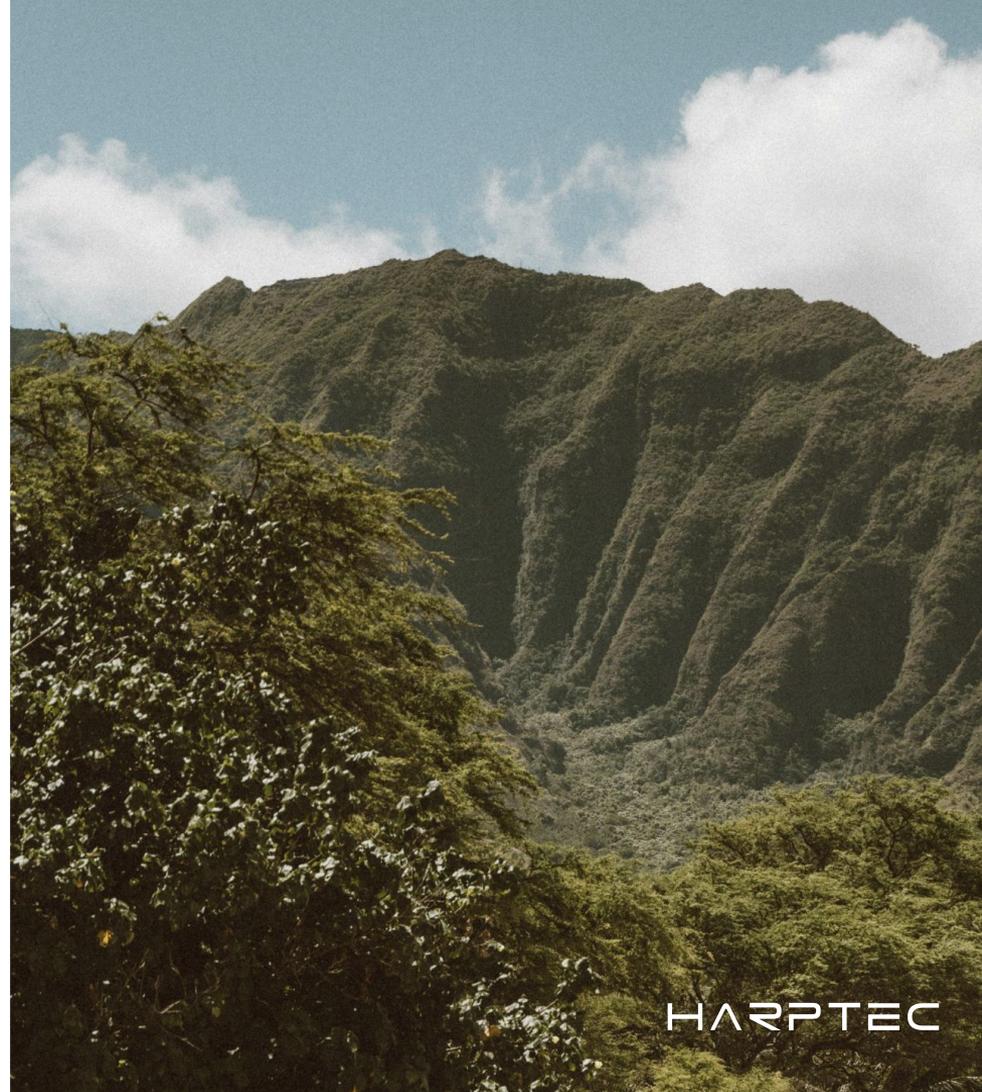
Sustainability

Green Transition
Finance

ESG
Operationalisation

ESGOS

OPERATIONAL SUSTAINABILITY
MANAGEMENT FOR THE
ORGANISATION



HARPTEC

Sustainability is business-critical, with the EU, China, and others mandating ESG disclosures, penalising greenwashing, and tying finance to verifiable impact. Credible sustainability performance is essential for **regulatory compliance, investor trust, and access to capital**.

ESGOS is the only hyper-automation sustainability OS - built to automate ESG workflows at scale.

We deploy the core platform, enabling sustainability teams to **scale, integrate, and embed ESG across the enterprise**.



Sustainability Officers become alpha generators with ESGOS: by automating core ESG workflows, ESGOS frees up time and delivers high-quality data—enabling officers to identify transition opportunities and turn sustainability into a source of strategic value.

We are a team of seasoned practitioners from ING, BNY, and Mizuho, alongside academics from LSE, with a **proven track record of delivering process transformation** through technology for Fortune 500 companies across the US, Europe, and Asia.

Why ESGOS

ESGOS transforms ESG from manual process to real-time, auditable performance. By automating sustainability workflows, ESGOS reduces risk and cost, unlocks access to green finance, and turns ESG into a measurable business asset.

With organisation-wide Sustainability Metrics, we enable consistent measurement, demonstrate compliance with regulation, and provide clear evidence of ROI—bridging the gap between sustainability and profitability.

Industry is striving to embed sustainability into core operations to meet investor and stakeholder expectations, comply with regulations, and drive long-term value. This is critically important as sustainability and ethical performance materially impact the revenue engine of the business, reputation, and resilience.

However, organisations lack operational resources to achieve ESG goals. The capabilities to reliably measure ESG impact are either insufficient or missing.

ESGOS transforms ESG from fragmented manual reporting into reliable, auditable, continuous operational performance, unlocking green finance and building trust.

ADDRESSING SUSTAINABILITY OPERATIONAL FAILURES IS A PRIORITY

EnergyAustralia (May 2025): Promoted “carbon neutral” energy via offsets, but failed to execute offsets. Settled legal action, ended program, and refunded customers. Poor policy execution led to reputational damage - estimated millions in ESG-related costs.

Virgin Atlantic, Renault, Aqua Pura (May 2025): Firms using banned green claims in ads due to compliance lapses. ASA censured misleading marketing. Inadequate enforcement of ESG advertising policies cost each brand £1–2 million (legal, auditing, ad review costs.)

Procter & Gamble – Charmin (Jan–May 2025): Marketed toilet paper as responsibly sourced without verifying supply chain practices. Faced U.S. class-action lawsuit and reputational fallout. ESG policy failed in execution, triggering legal and operational costs estimated at over \$15 million for compliance and brand repair.

NEGATIVE IMPACTS ARE GROWING

Regulatory Pressure Is Intensifying: Enforcement is escalating—regulators like the UK’s CMA can now impose fines of up to 10% of global turnover for misleading sustainability claims. Major fines, such as DWS’s €25 million penalty in 2025, signal a new era of accountability.

Erosion of Consumer Trust Demands Action: With 56% of consumers distrusting environmental claims (Edelman, 2024), companies must shift from superficial green messaging to verifiable, measurable sustainability efforts to retain brand credibility and customer loyalty.

Reputation Now Directly Impacts Value: In an interconnected market where investors, partners, and customers demand transparency, sustainability missteps increasingly translate into long-term reputational and financial damage—even before regulators act. Businesses must integrate sustainability as a core, strategic imperative.

COMPLEX, FRAGMENTED, EVOLVING,
UNDER-RESOURCED.

ESG is difficult to measure internally due to its broad, qualitative, and evolving nature across four pillars: Environmental, Social, Economic, and Governance. Data is often self-reported, inconsistent, and lacks compliance with global standards.

Bias, resource constraints, and poor auditability further hinder reliability. These challenges make ESG assessments complex, costly and subjective, limiting its comparability and effectiveness in driving responsible, resilient business practices.

EXAMPLE: MANUAL SCOPE 3 TRAVEL EMISSIONS REPORTING

Manual data collation: Travel emissions **data is scattered** across booking systems, PDFs, and expense reports, requiring hours of spreadsheet work and cross-checking. Takes hours, is labouring and error prone.

Inconsistent calculations: Emission factors are **applied manually, often with errors** or gaps due to non-standard formats, organisation changes and missing metadata.

Audit and reporting challenges: The firm **struggles to meet the Corporate Sustainability Reporting Directive** (CSRD applies to European and international companies in the EU or when they have a significant economic presence in the EU) and investor demands for timely, verifiable Scope 3 reporting, risking credibility of its net-zero claims.

EMBEDDING MEASURABLE AND IMPACTFUL SUSTAINABILITY ACROSS OPERATIONS

Before we dive into the features, consider this: What if your ESG data collection, analysis, and reporting workflows—spread across dozens of teams, tools, and spreadsheets—could be unified, automated, and made real-time?

ESGOS is not just a platform — it's a **sustainability operating system** built for scale, speed, and certainty. It enables your organisation to:

- Automate complex, time-consuming ESG workflows
- Standardise and verify sustainability data at the source
- Scale fluidly across teams, geographies, and compliance regimes
- Enable real-time insights and report on ESG RoI
- Turn ESG into a measurable, auditable, and actionable asset

ESGOS - HYPER AUTOMATION FOR SUSTAINABILITY

ESGOS delivers ESG Hyper-Automation through a scalable, **sensor-interoperable platform**. It **automates complex ESG workflows**, providing the data organisations need to measure, analyse, and report sustainability performance with speed, accuracy, and auditability.

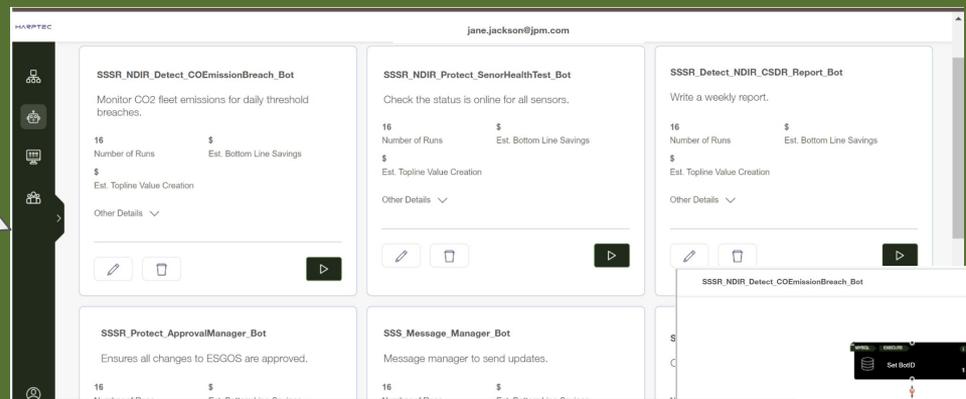
Powered by a hyper automation core (automatic ESG software system generation) for sustainability, ESGOS is both adaptive, flexible and scalable and designed to be mission critical. **Imagine 200+ micro systems running from a single layer that absorbs 100s of hours of manual workflows underlying your business.**

ESGOS turns sustainability into a practical, operational asset — **reducing cost, delivering best-in-class compliance, and unlocking long-term value.**

Solution - ESGOS

A Universe of systematic intelligent workflows powering Sustainability

ESG micro software (Bot) solution example. This Bot is quick to build, deploy and adapt. Within ESGOS it remains compliant and inline with organisational IT standards.



ESGOS ingests data to structure, monitor, evidence and report absorbing operational weight.

Subject ESGOS Alert: Fuel Usage Threshold Breach – Immediate Review Required

Dear Annie,

Daily Monitoring Alert – Direct Fuel Use Breach

As part of ESGOS daily oversight, we have identified a threshold breach in fuel consumption and associated CO₂ emissions for the following operational unit:

- Branch / Fleet Unit: [Example: North Region Fleet]
- Date of Breach: [Today's Date]
- Fuel Usage: 1,250 litres (Threshold: 1,000 litres)
- Estimated Emissions: 3,250 kg CO₂e (Threshold: 2,600 kg CO₂e)

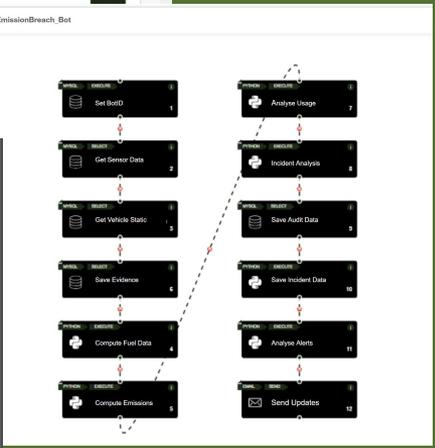
Potential Risks Identified:

- Regulatory non-compliance exposure
- Reputational and greenwashing risk
- Increased operational costs and inefficiencies
- Threat to ESG targets and access to green financing

Recommended Next Steps:

1. Review underlying causes (route inefficiency, vehicle maintenance, reporting error, etc.)
2. Confirm or adjust operational targets if necessary
3. Record findings and mitigation actions in the ESGOS Compliance Register

Failure to address breaches promptly increases exposure to financial, regulatory, and reputational risks. For further details, please access the ESGOS Dashboard [www.gallion.com/esgos]



Daily monitoring means breaches are detected, reducing the risk of regulatory fines, reputational damage, and accusations of greenwashing.

ESGOS Use Case

Using an example use case of green transition finance the following case study highlights the drivers for green transitions, the operational demands and how ESGOS meets the challenge.

GreenLine Mobility Solutions, part of India's Essar Group - Logistics Company Green Transition Finance

GreenLine Mobility Solutions, part of India's Essar Group, secured \$275 million to decarbonise its heavy truck fleet through LNG and electric vehicles.

The funding supports over 10,000 low-emission trucks and 100 fuelling stations, aligning with India's 2070 net-zero goals.

An Example Policy: **Direct Fuel Use and Emissions Reduction – Branch and Fleet Operations**

Objective: To quantify, monitor, and reduce direct greenhouse gas (GHG) emissions from on-site fuel use and company-owned vehicles in accordance with ISO 14064-1:2018. **Scope:** All fleet vehicles (cars, vans, generators, heating systems) consuming petrol, diesel, or natural gas.

Requirements:

- Record monthly fuel consumption per site and vehicle.
- Apply approved emission factors to calculate CO₂e.
- Set annual reduction targets (e.g., 10% fleet emissions by 2026).
- Review and validate data quarterly.
- Replace vehicles with low-emission alternatives where feasible.

Green Transition Goals - Direct Fuel Use and Emissions

Regenerative Goals

- Electrify or optimise vehicles to cut costs and emissions.
- Use smart sensors to identify inefficiencies in real time.
- Upgrade heating to clean energy (e.g., heat pumps).
- Automate low-emission behaviours (idling alerts, route planning).
- Procure certified low-carbon fuels.
- Track performance with ESGOS to access green finance and incentives.

Regenerative Value Creation

- Actively restores energy balance and cuts fossil fuel reliance.
- Enhances ecosystem health (air quality, innovation, community).
- Creates adaptive systems that improve over time.

Increase Profitability

- Immediate cost savings on fuel and maintenance.
- Gain green incentives and subsidies.
- Reduced carbon exposure penalties, reputational damage, and regulatory constraints.
- Stronger ESG credentials, attracting capital, customers, and top talent.

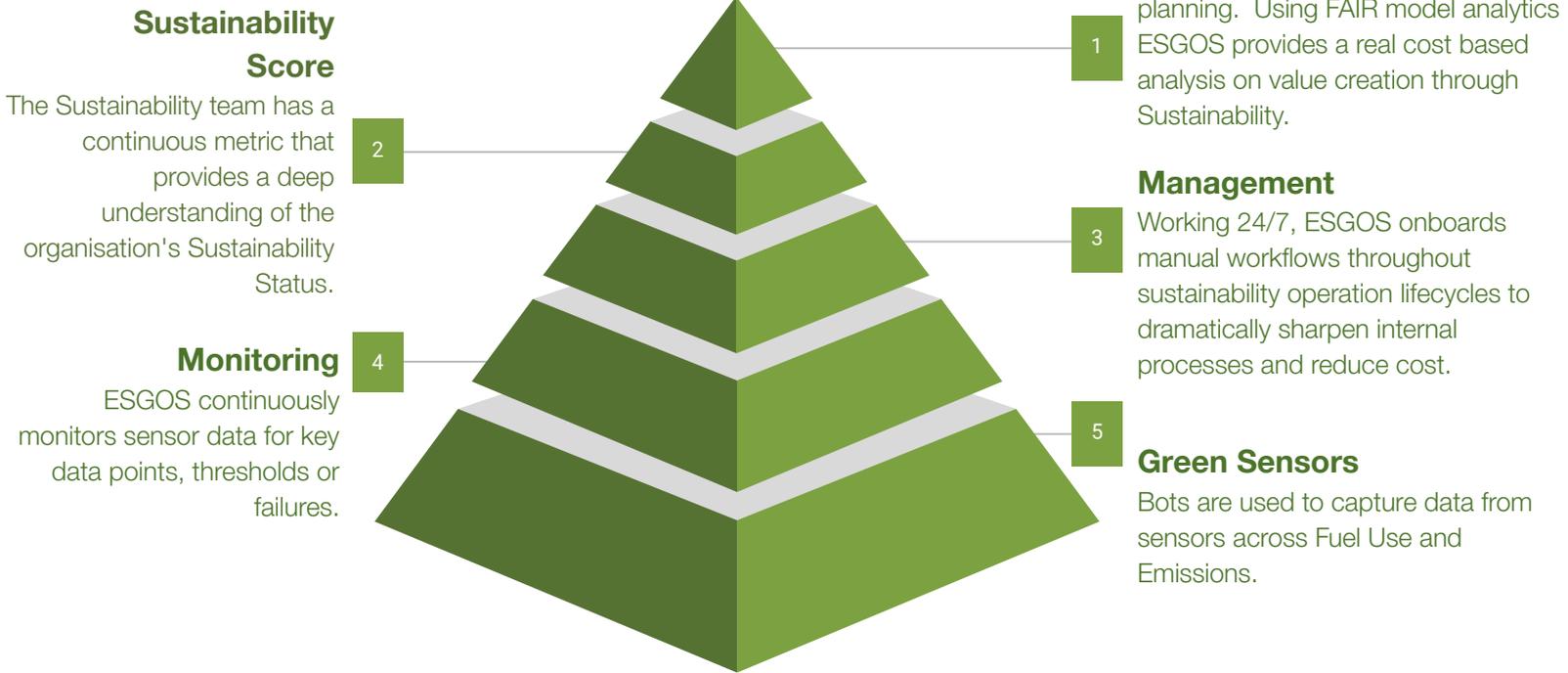
Green Transition Policy Requirements : **Operational Weight**

Procedure	Frequency	Evidence	Reporting
1. Fuel Usage Data Collection	Weekly	Fuel receipts, meter logs, utility bills	ESGOS upload; monthly review by sustainability lead
2. Emissions Quantification & Verification	Monthly	Emission factors, calculation sheets, verification logs	Report to CSO; stored in ESGOS
3. Annual Target Review	Annually	Baseline docs, emission trend reports, meeting notes	Executive summary for board; ESGOS archive
4. Asset & Fuel Audit	Quarterly	Asset registry, inspection records, fuel type data	Updated in ESGOS; flags high-emission assets
5. Audit & Assurance Prep	Quarterly	Full documentation set for audit and assurance	Assurance-ready ESGOS archive; access-controlled

Green Sensors Provide **Raw Data**

Sensor	Assets	Data	Utilisation
Fuel Consumption (Telemetrics).	Vehicles.	Fuel used, distance travelled.	Emissions Calculations.
Boiler Flow and Fuel Input Meters.	Onsite Heating (Offices, Factories etc).	Litres of Gas Consumed, operational hours.	Quantify Stationary Combustion Emissions.
Generator Run Time Monitors.	Backup Power Units.	Diesel Usage, Start Stop Frequency.	Track emergency fuel usage, flag unnecessary runtime.
Smart Meter Interfaces.	Direct Utility Supply.	Natural Gas Volumes Used By Site.	Automatically Calculate Scope 1 Utility based emissions.
Asset Condition and Lifecycle Tags.	Branch and Equipment Vehicles.	Age, usage hours and emission class.	Feed into asset audits and retirement prioritisation.

ECOSYSTEM OF ESG Bots



ESGOS IMPACT AND BENEFITS :

- **Real-Time Accuracy** - Captures fuel and emissions data live from sensors and telematics. Fleet Managers & Sustainability Leads benefit because they gain **rapid visibility into inefficiencies** (e.g., idling, overuse) and reduce reliance on error-prone manual logs.
- **Automated Efficiency** - Automates fuel reporting, compliance workflows, and alerts. Branch Managers & Operations Analysts benefit as they **save time, cut admin workload, and focus on improving operational performance rather than managing spreadsheets.**
- **Trusted, Auditable Data** - Standardised and verifies emissions data across all locations. Compliance Teams & ESG Reporting Leads. Ensure consistency, reduce audit risks, and simplify CSRD/TCFD-aligned reporting.
- **Scalable Insights** - Provides an enterprise-wide view across fleet and branches. COOs & Chief Sustainability Officers (CSOs) benefit from **clean data to make informed strategic decisions, benchmark sites, and lead long-term carbon reduction and wider sustainability efforts.**

Why now ?

Swiss Re warns that unchecked climate change could erase 18% of global GDP by 2050. McKinsey estimates that \$2.5 trillion in annual economic value is at risk from climate hazards by mid-century. And the European Central Bank forecasts climate-related losses of up to €1 trillion for banks alone. ESGOS isn't just a compliance solution — it's your strategic operating system to anticipate, mitigate, and **monetise ESG risk** before it hits your balance sheet.

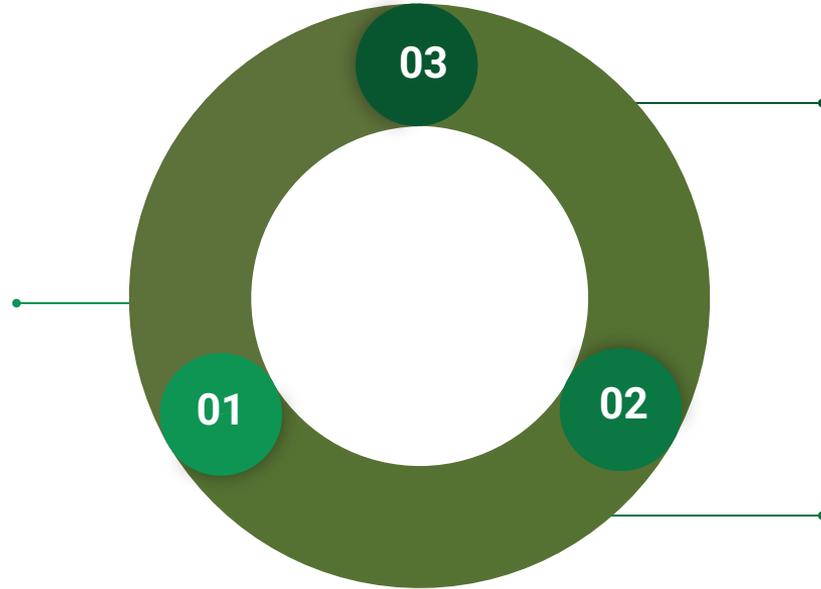
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Operationalise ESG with Automation:

Transform manual ESG reporting into continuous, auditable performance. Gain real-time insights, enforce policy execution, and avoid costly compliance failures—**enhancing your strategic influence across the organisation.**



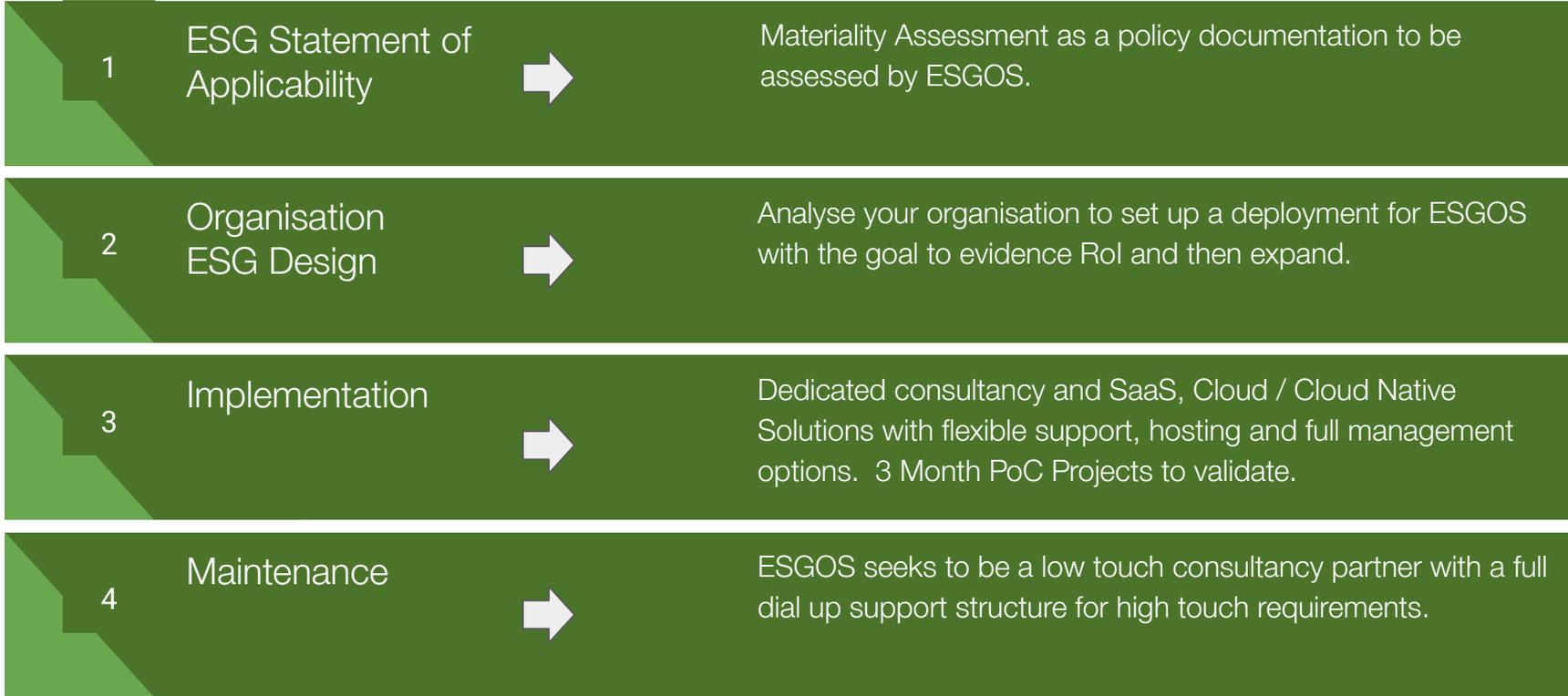
Build Resilience and Trust:

Deliver transparent, verified ESG data to investors and regulators. Strengthen stakeholder confidence, protect brand reputation, and **align the organisation with evolving sustainability standards.**

Unlock Green Finance and Cost Savings:

Automate emissions tracking and reporting to access ESG-linked funding. Reduce fuel and compliance costs while **making sustainability a financially valuable driver, not just a regulatory obligation.**

Client Engagement



Further Reading

The following sections provide further information.

Further Real World Examples

Boohoo (2020 – Labour Rights Scandal) - Issue: UK fashion retailer Boohoo was exposed for paying garment workers below minimum wage in unsafe Leicester factories. ESG Relevance: Boohoo received strong ESG scores and promoted supply chain transparency policies internally. Failure: Internal ESG tracking missed widespread labor abuses. Public trust and share price collapsed after media investigation. Lesson: ESG systems that rely on self-audits and disclosed policies without external validation fail under real-world scrutiny.

Rio Tinto (2020 – Destruction of Juukan Gorge) - Issue: The mining giant blew up a 46,000-year-old Aboriginal sacred site in Western Australia while expanding an iron ore mine. ESG Relevance: Rio Tinto had strong ESG ratings and internal cultural heritage policies. Failure: Despite internal governance frameworks, decisions lacked ethical oversight and stakeholder respect. Outcome: Global outrage, executive resignations, and investor pressure followed. Lesson: ESG risk assessment must go beyond box-ticking to address irreversible reputational and cultural damage.

Credit Suisse (2021–2023 – Greensill & Archegos Crashes) - Issue: Credit Suisse suffered massive losses due to exposure to Greensill Capital (supply chain finance) and Archegos Capital (leverage blow-up). ESG Relevance: Credit Suisse promoted strong governance and risk controls in internal ESG disclosures. Failure: Internal ESG governance ratings overlooked weak risk management and oversight failures. Outcome: Billions lost, board changes, and merger with UBS in 2023. Lesson: High ESG scores can mask fragility in core governance systems without rigorous stress-testing or accountability.

Glossary of Key Terms

CSRD – Corporate Sustainability Reporting Directive: A European Union regulation requiring large companies and certain non-EU firms doing business in the EU to disclose detailed ESG (Environmental, Social, Governance) performance, including climate risks, governance, and sustainability metrics. [https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en]

Scope 3 Emissions :Greenhouse gas (GHG) emissions not produced directly by the company but indirectly from its value chain—such as travel, purchased goods, investments, and product use. Part of the internationally recognised GHG Protocol (along with Scope 1 and Scope 2). [<https://ghgprotocol.org/scope-3-technical-calculation-guidance>]

ESG Bots: Automated software agents within the ESGOS platform that perform repeatable ESG-operational tasks—such as data collection from sensors, emissions calculations, policy enforcement, or report generation. They operate continuously and adapt to new policies or operational changes with minimal manual effort.

Hyper-Automation: A digital transformation approach that combines advanced technologies—AI, bots, sensors, workflows, and analytics—to automate complex, multi-step processes beyond basic RPA (Robotic Process Automation). In ESGOS, this means automating ESG data capture, verification, reporting, and assurance at scale. [<https://www.gartner.com/en/information-technology/glossary/hyperautomation>]

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Our Mission

Our mission is to make sustainability measurable, value driven, and continuous — empowering organisations to meet ESG regulations, unlock green finance, and accelerate their transition to a sustainable future.

10+

HARPTEC has successfully delivered solutions for over 10 years for Fortune 500 organisations as a critical supply chain vendor.

- LTOS - Secondary Loan Trading Workflow Automation
- OSCEAN - OTC Structured Products OMS and Automation
- EMSA - Emergency Demand Intelligence Prototype
- ISOOS - Cyber Automation Platform

4+

We have delivered across market domains making us a cross industry consultancy

- Capital Markets
- Healthcare
- Social Connectivity
- Cyber Security

20+

Our professionals including former leadership from names like Fortune 500 companies which makes us a proven consultancy service provider

- Transformation and Strategy
- Product Engineering
- Software Engineering
- AI and Data Science

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solution focused and value driven.